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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
LEE, Y YOUNG	
ART UNIT	**PAPER NUMBER**
2621	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/658,839	YU ET AL.	
	Examiner	Art Unit	
	Y. Lee	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 32-49* is/are pending in the application.

4a) Of the above claim(s) *1-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-40 and 42-49* is/are rejected.

7)☒ Claim(s) *41* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/9/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group IV, claims 32-49, in the reply filed on 5/31/07 is acknowledged. The traversal is on the ground(s) that there is no burden. This is not found persuasive because This is not found persuasive because according to MPEP section 803, a serious burden on the examiner may be prima facie shown if the examiner shows by appropriate explanation either separate classification, separate status in the art, or a different field of search. For example, it is noted that the search for Group IV (claims 32-49) does not require a search for the thresholds settings and search patterns, as claimed in Group I (claims 1-18). Similarly, the search for Group I does not require a search for the refinement case ascertainer selection criteria, DCT, and IDCT operations within a wireless interface mobile device.

It is further noted that the serious burden is solely caused by the fact that the claimed subject matter in Group IV (claims 32-49) are separately classified and require different fields of search.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1-18 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 5/31/07.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 32-39 and 42-46 are rejected under 35 U.S.C. 102(e) as being anticipated by Hsu et al (7,145,950).

Hsu et al, in Figures 4-6, discloses a method of motion vector determination in digital video compression in the same device as specified in claims 32-39 and 42-46 of the present invention, comprising a candidate selector that is capable of accepting a current macroblock 62, the candidate selector adapted to select a motion vector candidate from a set of motion vector candidates with regard to the current macroblock using an accuracy indicator corresponding to the selected motion vector candidate (Fig. 6); a refinement case ascertainer that is capable of accepting the selected motion vector candidate and the accuracy indicator corresponding thereto 204, the refinement case ascertainer adapted to ascertain a refinement case from among a plurality of refinement cases based on a first threshold 202 and a second threshold 204 and responsive to the

accuracy indicator; and a refinement case analyzer 206 that is capable of accepting the ascertained refinement case, the refinement case analyzer adapted to analyze a collection of points defined by the ascertained refinement case with regard to the current macroblock to potentially refine the selected motion vector candidate 208.

With respect to claims 33-39 and 42-46, Hsu et al also discloses the candidate selector is further capable of accepting a current frame 60 that includes the current macroblock 62; wherein the candidate selector is further capable of accepting a reference frame 70, the candidate selector configured to extract reference macroblock candidates 72 from the reference frame in accordance with the set of motion vector candidates; wherein the candidate selector is further configured to determine a respective accuracy indicator (e.g. cost functions) for each of the reference macroblock candidates; the candidate selector further adapted to select the selected motion vector candidate by selecting the motion vector candidate corresponding to a best respective accuracy indicator (i.e. lowest cost function); wherein the set of motion vector candidates consists of three motion vectors and a null vector (e.g. no motion); wherein the set of motion vector candidates comprises two motion vectors from two macroblocks (64-68) that are temporally identical and spatially contiguous to the current macroblock and one motion vector P2 from one macroblock that is spatially identical and temporally contiguous to the current macroblock; an accuracy indicator determiner that determines accuracy indicators (e.g. cost functions) for reference macroblocks from a reference frame with regard to the current macroblock of a current frame; wherein the accuracy indicator determiner comprises a sum of absolute differences (SAD) determiner;

wherein each refinement case of the plurality of refinement cases defines a plurality of test points (e.g. P1-P4); wherein the refinement case ascertainer is configured to associate a respective refinement case of the plurality of refinement cases to a respective range of accuracy values of a plurality of ranges of accuracy values, the plurality of ranges of accuracy values at least partially delineated by the first threshold and the second threshold (Fig. 6); wherein the refinement case ascertainer is further adapted to ascertain the ascertained refinement case by ascertaining the respective range of accuracy values of the plurality of ranges of accuracy values in which the accuracy indicator belongs (e.g. below or above threshold); wherein the refinement case analyzer is further adapted to refine the selected motion vector candidate when an accuracy indicator corresponding to a point of the collection of points is better than the accuracy indicator corresponding to the selected motion vector candidate (e.g. lowest cost function); wherein the collection of points includes a plurality of test points and a central pixel that corresponds to the selected motion vector candidate (e.g. Fig. 2); wherein the refinement case analyzer is configured to select a best accuracy indicator from a collection of respective accuracy indicators created for respective points of the collection of points 208.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al (7,145,950) in view of Sezan et al (5,682,205).

Although Hsu et al discloses various threshold requirements, it is noted Hsu et al differs from the present invention in that it fails particularly disclose details of the criteria used. Sezan et al however, in Figure 10, teaches the concept of such well known plurality of refinement cases comprises a first case (e.g. full), a second case (e.g. half), and a third case (e.g. quarter); and wherein the refinement case ascertainer is configured to implement the following selection criteria: if the accuracy indicator is less than the first threshold, then the first case is ascertained (e.g. full pixel accuracy); if the first threshold is less than the accuracy indicator which is less than the second threshold, then the second case is ascertained (e.g. half pixel accuracy); and if the accuracy indicator is greater than the second threshold, then the third case is ascertained (e.g. quarter pixel accuracy).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having both the references of Hsu et al and Sezan et al before him/her, to incorporated the well know motion vector accuracy selection criteria as taught by Sezan et al in the motion estimation method of Hsu et al, in order to adapt the method to the accuracy of the global motion compensation.

9. Claims 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu et al (7,145,950).

Although Hsu et al disclose a camera source for generating video images in accordance with the MPEG standard, it is noted Hsu et al differs from the present invention in that it fails particularly disclose details of the compression scheme as specified in claims 47-49. However, Examiner takes Official Notice that such encoding technique as DCT and IDCT are notoriously well known in the compression art, especially in a wireless mobile device where bandwidth reduction is essential.

Therefore, once of ordinary skill in the art would have had no difficulty in recognizing that by exploiting well know compression techniques conforming to the MPEG standard, portable imaging devices can be more efficiently adapted process video images while minimizing the use of excessive bandwidth.

Allowable Subject Matter

10. Claim 41 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter: Claim 41 is considered allowable over the prior art because none of the references of record alone or in combination suggest, disclose, or teach a refinement case analyzer adapted (i) to analyze a first case, when ascertained by the refinement case ascertainer, by testing four contiguous points at the selected motion vector candidate on a cross direction, (ii) to analyze the second case, when ascertained by the refinement case ascertainer, by testing eight contiguous points around the selected motion vector candidate, and (iii) to analyze the third case, when ascertained by the refinement case ascertainer, by testing eight points that are around and that are two pixels away from the selected motion vector candidate all together as claimed. The closest prior art, Sezan et al (5,682,205), discloses conventional motion compensation, either singularly or in combination, fails to anticipate or render the above limitations obvious.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Y. Lee whose telephone number is (571) 272-7334. The examiner can normally be reached on (571) 272-7334.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (571) 272-7353. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Y. Lee
Primary Examiner
Art Unit 2621

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